

REMARKS

Claims 1-37 are currently pending. Claims 22-27, 29, and 30 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 1-14, 16, 18-24, 28, and 31-37 stand rejected under 35 U.S.C. § 102. Claims 15 and 17, while otherwise found allowable, are objected to as being dependent on a rejected base claim. Applicants address each basis below.

Claim Amendments

Claims 1, 3, 5, 11, 23, 24, 29, and 30 have been amended. New claims 38-43 have been added. Claims 1 and 5 have been amended to further require one of the following features: 1) the starting tobacco has a moisture content of at least 10%; 2) step (b) occurs at 0-24°C and 1000-2200 psi for carbon dioxide; the hydrocarbon is selected from ethane, propane at 0-50°C and 100-2000 psi, or butane; or the hydrocarbon is a compressed gas; or 3) the tobacco having a reduced amount of the substituent has substantially the same taste and aroma as untreated tobacco, or the flavor and aroma compounds removed in step (b) are redeposited in the tobacco after step (c). Claim 3 has been amended to further require one of the following features: 1) the starting tobacco has a moisture content of at least 10%; 2) the subcritical fluid is selected from carbon dioxide, ethane, propane, butane, Freon 22, or nitrous oxide, whereby when the subcritical fluid is carbon dioxide, step (b) occurs at 0-24°C and 1000-2200 psi, and, when the subcritical fluid is propane, step (b) occurs at 0-50°C and 100-2000 psi, or the subcritical fluid is a hydrocarbon that is a compressed gas; or 3) the tobacco having a reduced amount of the polycyclic aromatic hydrocarbon has substantially the same taste and aroma of untreated tobacco, or the flavor and aroma compounds removed in step (b) are redeposited in the tobacco after step (c). Claim 11 has been amended to remove its dependency from claim 5. Claims 23 and 24 have been amended to correct typographical errors. Claim 29 has been amended to specify the tobacco “in step (a).” Claim 30 has been amended to remove its dependency from claim 2 and to specify the tobacco “in step (a).” New claims 38-43 are

drawn to the subject matter previously claimed in claims 11, 14, 15, 19, 22, and 25, respectively.

Support for the amendment of claims 1, 3, and 5 is found in the specification at page 3, lines 26-28; page 4, lines 20-25; page 7, lines 7-10; page 8, lines 10-16; page 9, Table 2; page 10, lines 3-5; page 11, Table 3; and in claim 9. Support for new claims 38-43 is found in claims 11, 14, 15, 19, 22, and 25, respectively.

No new matter has been added by the present amendment. Applicants reserve the right to pursue any cancelled subject matter in this or in a continuing application.

Rejections under 35 U.S.C. § 112, second paragraph

Claims 22-27, 29, and 30 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite. Claims 22-24 stand rejected for reciting the term “said vessel,” and claims 25-27, 29, and 30 stand rejected for reciting the term “said tobacco.” Applicants traverse the rejection as applied to the amended claims.

Applicants submit that the term “said vessel” in claims 22-24 is definite. Claims 22-24 depend from claims 1, 2, and 3 or 4, respectively. Each of claims 1-4 refers to only one vessel. Therefore, the term “said vessel” in each of claims 22-24 refers to the single vessel mentioned in each of claims 1-4. This basis for rejection should be withdrawn.

Applicants further submit that the term “said tobacco” recited in claims 25-27 is also definite. These claims depend from claims 22-24, which in turn depend from claims 11-13, which in turn depend from claims 1, 2, and 3 or 4, respectively. The pending claims are drawn to processes that remove a constituent from tobacco and require a series of ordered steps. In claims 1, 2, and 3 or 4, tobacco containing a constituent is placed in a vessel in a first step. In a second step, the tobacco is contacted with a subcritical fluid under conditions that cause the constituent to dissolve into the subcritical fluid. In a third step, the subcritical fluid containing the dissolved constituent is removed from the vessel, leaving behind a tobacco product containing a reduced amount of the removed constituent. Claims 11-13 further require the step of separating the constituent from the

subcritical fluid, after the third step, and claims 22-24 require recirculating the subcritical fluid after the separating step. As part of these processes, flavor and/or aroma compounds may be removed from the tobacco. Claims 25-27 are drawn to methods of depositing flavor or aroma compounds removed in the process to the tobacco following performance of the above steps. Applicants submit that because of the logical sequence of these steps, the meaning of the term “said tobacco” in claims 25-27 is definite. That is, it is not the tobacco of steps (a)-(c), but rather the tobacco produced by claims 22-24. This basis for rejection should be withdrawn.

Claims 29 and 30 have been amended to specify that the tobacco “in step (a).” Accordingly, this basis for rejection may also be withdrawn.

Rejection under 35 U.S.C. § 102

Claims 1-14, 16, 18-24, 28, and 31-37 stand rejected under 35 U.S.C. § 102 as being anticipated by Muller (U.S. Patent No. 4,506,682; hereafter “Muller”). As the basis for the rejection, the Office states that Muller discloses “providing a vessel 4 comprising tobacco..., contacting the tobacco with sub-critical carbon dioxide..., and removing the fluid from the vessel to extract a component...from the tobacco...” (Office Action, pages 2 and 3). In further regard to the rejection of claims 2-5, the Office states that as “Muller contacts the tobacco under...substantially the same sub-critical conditions...as disclosed by applicant such as temperature range, pressure range, ratio of carbon dioxide to tobacco, and treatment time, it would be inherent that the claimed specific compounds would also be extract[ed] from Muller’s treated tobacco” (Office Action, page 3). Applicants submit that the invention of independent claims 1-5 is not anticipated by Muller and that the rejection of claims 1-5 and their respective dependent claims should be withdrawn.

Claims 1 and 5

Claims 1 and 5 have been amended to require one of the following features: (1) the starting tobacco has a moisture content of at least 10%; (2) step (b) occurs at 0-24°C and 1000-2200 psi for carbon dioxide; the hydrocarbon is selected from ethane, propane at 0-50°C and 100-2000 psi, or butane; or the hydrocarbon is a compressed gas; or (3) the tobacco having a reduced amount of the substituent has substantially the same taste and aroma as untreated tobacco or the flavor and aroma compounds removed in step (b) are redeposited in the tobacco after step (c). Applicants submit that none of the above-described features is disclosed in Muller, either explicitly or inherently.

Muller only describes tobacco that has a moisture content of *under 10%*. In particular, Muller describes tobacco with a water content of 6.5%, 8.0%, 7%, and 7.2% in Examples 1-4, respectively. Muller also states that their method “does not add or use moisture in any process stage” (column 5, lines 59-61).

Muller also fails to describe use of carbon dioxide at 0-24°C and 1000-2200 psi, ethane, propane at 0-50 °C and 100-2000 psi, or butane in the methods of extracting tobacco aroma oil. Muller does not describe the use of carbon dioxide in the temperature range of 0-24°C *and* the pressure range of 1000-2200 psi. Furthermore, Muller expresses a preference for pressures well below 1,000 psi (see, e.g., column 4, lines 21-30). Neither ethane nor butane is described in Muller. While Muller describes the use of propane as a solvent (column 2, lines 42-48), the reference fails to describe the use of propane at the pressures and temperatures specified in the amended claims. Instead, Muller states that organic solvents are employed under normal pressure conditions (column 3, lines 8-9). Atmospheric pressure is 15 psi, well below the 100 psi minimum specified by the claims.

Muller also fails to describe the use of a hydrocarbon in the form of a condensed gas. As noted, Muller describes the use of organic solvents at normal pressure conditions, which would not result in compression of a gas.

Lastly, Muller does not disclose a process whereby a tobacco is produced that has substantially the same taste and aroma as untreated tobacco. Contrary to this requirement,

the methods described in Muller are specifically directed to methods of *removing* tobacco aroma oil from tobacco (see, e.g., Abstract). Muller also fails to describe a process whereby the flavor and aroma compounds removed in processing are added back to the tobacco used in the processing. Muller teaches that the aroma oil extracted by their disclosed methods may be added to “different, weakly aromatic tobaccos...” (column 1, lines 18-25) and does not specify that the aroma oils be added back to the same tobacco that was used in the processing.

As Muller fails to describe any of the above features, the rejection of independent claims 1 and 5 under 35 U.S.C. § 102 should be withdrawn.

Claim 3

Claim 3 has been amended to require one of the following features: (1) the starting tobacco has a moisture content of at least 10%; (2) the subcritical fluid is selected from carbon dioxide, ethane, propane, butane, Freon 22, or nitrous oxide, whereby when the subcritical fluid is carbon dioxide, step (b) occurs at 0-24°C and 1000-2200 psi and, when the subcritical fluid is propane, step (b) occurs at 0-50°C and 100-2000 psi, or the subcritical fluid is a hydrocarbon that is a compressed gas; or 3) the tobacco having a reduced amount of the polycyclic aromatic hydrocarbon has substantially the same taste and aroma of untreated tobacco or the flavor and aroma compounds removed in step (b) are redeposited in the tobacco after step (c).

As described above, Muller does not teach (1) a starting tobacco that has a moisture content of at least 10%, (2) use of carbon dioxide at 0-24°C and 1000-2200 psi, ethane, propane at 0-50 °C and 100-2000 psi, or butane, (3) use of a hydrocarbon in the form of a condensed gas, or (4) a process whereby a tobacco is produced that has substantially the same taste and aroma as untreated tobacco. Muller also fails to teach the use of Freon 22 or nitrous oxide for extraction. As Muller fails to describe any of the above features, the rejection of independent claim 3 under § 102 should also be withdrawn.

Claims 2 and 4

Claims 2 and 4 are directed to methods of selectively reducing the amount of a secondary alkaloid relative to a primary alkaloid or selectively reducing the amount of a polycyclic aromatic hydrocarbon (PAH) relative to a primary alkaloid in tobacco. In contrast to the selective removal of a secondary alkaloid or a PAH relative to a primary alkaloid, the method of Muller results in the nearly complete removal of a primary alkaloid from tobacco (column 5, lines 59-64):

[T]his procedure according to the invention does not add or use moisture in any process stage, but, nevertheless, almost the *entire nicotine* is dissolved out of the primary extract prepared according to the invention and deposited in the separating vessel. (Emphasis added).

As further taught by Muller, Example 1 resulted in removal of 95% of the nicotine in the tobacco (column 8). As the method described in Muller resulted in removal of almost all nicotine, i.e., a primary alkaloid, from tobacco, these methods cannot result in selective removal of a PAH or secondary alkaloid. The rejection of independent claims 2 and 4 should also be withdrawn.

As the subject matter of independent claims 1-5 is novel over Muller, Applicants respectfully request that the rejection of claims 1-5 and their respective dependent claims (claims 6-14, 16, 18-24, 28, and 31-37) under 35 U.S.C. § 102 be withdrawn.

Claim Objections

Claims 15 and 17 are objected to as being dependent from a rejected base claim. Applicants submit that the rejections under 35 U.S.C. §§ 102 and 112 should be withdrawn, and therefore, the objection to claims 15 and 17 should also be withdrawn.

CONCLUSION

Applicants submit that the claims are now in condition for allowance, and such action is hereby respectfully requested.

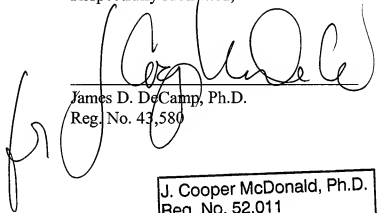
Transmitted herewith is a petition to extend the period for replying to the Office Action for three months, to and including May 26, 2009, and payment of the required extension fee.

In view of the present amendment, the number of independent and total claims has not increased, and therefore, the payment of additional claims fees is not required.

If there are any additional charges or any credits, please apply them to Deposit Account No. 03-2095.

Respectfully submitted,

Date: 5/26/09


James D. DeCamp, Ph.D.
Reg. No. 43,580

Clark & Elbing LLP
101 Federal Street
Boston, MA 02110
Telephone: 617-428-0200
Facsimile: 617-428-7045

J. Cooper McDonald, Ph.D.
Reg. No. 52,011